Center Independent Research & Development: LaRC IRAD

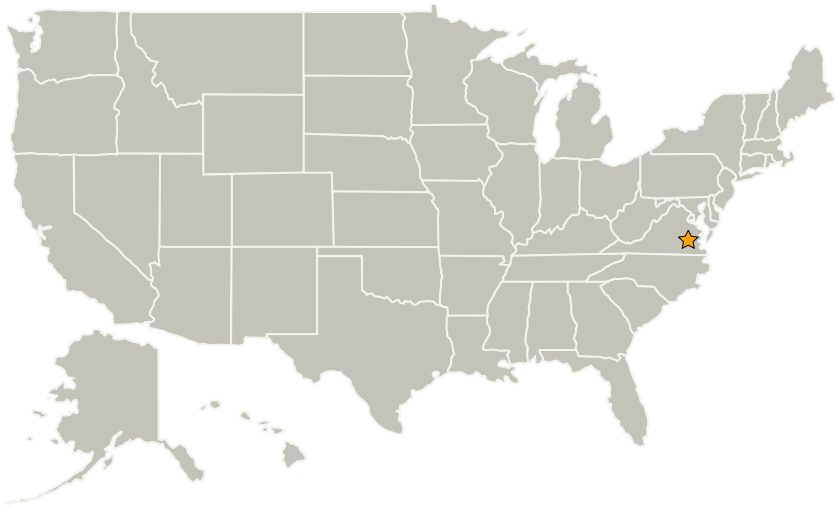
Machine Learning Algorithms for Physics-Based Simulations

Completed Technology Project (2013 - 2014)

Project Introduction

We are reaching the physical limits of silicon-based computer technology. Realization of Langley's goals for quantum computing and Digital Twin would require advanced computer hardware and software architectures. Quantum and molecular computing architectures combined with advanced machine learning algorithms are being matured, and these new architectures and algorithms will enable an extraordinary computing power. The primary goal of this proposal is to explore the use of machine learning algorithms to solve Langley's future computing needs for an integrated, multiphysics, and multiscale simulation.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia

Machine Learning Algorithms for Physics-Based Simulations

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Center Independent Research & Development: LaRC IRAD

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Project Management

Program Manager:

Julie A Williams-byrd

Project Manager:

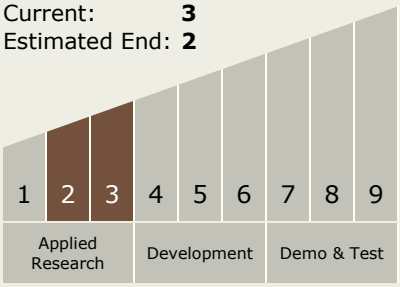
Jamshid A Samareh

Principal Investigator:

Jamshid A Samareh

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **2**



Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.6 Ground Computing
    - TX11.6.4 Quantum Computer